

### REMARKS

Applicants sincerely appreciate the thorough examination of the present application as evidenced by the Final Office Action of September 26, 2003 ("Final Action"). Claims 1 and 3-26 stand rejected under 35 U.S.C. 103 as obvious over United States Patent No. 5,480,503 to Casey et al. ("Casey") in view of United States Patent No. 6,118,502 to Yamazaki et al. ("Yamazaki") and/or United States Patent No. 5,455,202 to Malloy et al. ("Malloy").

Applicants further appreciate the Examiner's indication that patentability may at least be achieved in the plastic carrier thickness and the devices/connectors applicable in that range. (Final Action, p. 8). In response, Applicants have added new claims Claims 27-29. Applicants submit that all of the pending claims, not just the new claims, are patentable over the cited references for at least the reasons discussed below. To facilitate the Examiner's reconsideration of the rejections, Applicants will not repeat the arguments from the previous amendment and will, instead, only address the points newly raised in the Final Action. However, Applicants' previous amendment mailed April 24, 2003 is incorporated herein by reference in its entirety.

#### **The Section 103 Rejections**

Claims 1, 3-20, and 22-26 stand rejected under 35 U.S.C. § 103(a) as obvious over Casey in view of Yamazaki. Claim 21 stands rejected under 35 U.S.C. § 103(a) as obvious over Casey and Yamazaki in further view of Malloy. Applicants submit that the claims are patentable over the cited references because the cited combinations fail to disclose or suggest all of the recitations of the claims.

Independent Claim 1 recites "one or more **further components** of the electrical circuit that are electrically coupled to the thin-film or multi-layer ceramic structure are arranged on a side of the electrically conductive thin-film or multi-layer ceramic structure facing the carrier element." The Final Action asserts that Casey discloses such a recitation at Col. 5, lines 1-5. (Final Action, p. 3). The Final Action further refers to Figure 1, item 13 of Casey as depicting an electrical circuit/electrically conductive structure and item 14 as disclosing a metallized carrier element. (Final Action, p. 3). However, neither the cited passage nor the cited figure discloses or suggests further components arranged on the side of

the electrically conductive structure facing the carrier element, as recited in Claim 1.

Applicants assume that the "further components" referred to in the Final Action are the vias 16 shown in Figure 3 of Casey, as Casey does not appear to disclose any other elements coupled to the electroconductive circuit layer 13 and facing the greensheet 14.

It is well established that a patentee can be his own lexicographer. (MPEP Section 2173.01). Thus, applicants are free to define the invention in whatever terms they choose, so long as the terms are not used in ways that are contrary to accepted meanings in the art and the specification makes clear the boundaries of the subject matter for which protection is sought. In this case, the present specification clearly defines "further components" as including electrical connectors, such as surface mount (SMT) components, pins, resistors, capacitors, coils, transistors, and semiconductor chips. (Specification, pp. 5-6). Such a definition does not include the vias described in Casey. Thus, Casey does not disclose or suggest "further components" arranged on the side of an electrically conductive structure facing a carrier element, as defined in the present specification and recited in Claim 1.

The other references cited in the Final Action also fail to disclose or suggest such a recitation. Thus, the combination of the cited references fails to disclose or suggest *all* of the recitations of Claim 1. Accordingly, applicants submit that Claim 1 and the claims that depend therefrom are in condition for allowance for at least these reasons.

Independent Claim 14 also contains recitations that are neither disclosed nor suggested by the cited references. As an initial matter, Claim 14 is patentable at least for analogous reasons to those discussed above with respect to Claim 1, as it includes the step of mounting the "further components" recited in Claim 1. Claim 14 further recites the steps of "applying a composition to a side of the temporary substrate" and "**hardening the applied composition to form the carrier element.**" Applicants submit that this latter step is neither disclosed nor suggested by the cited references. The Final Action asserts that "[i]n regard to claim 14, Casey et al. teaches the application of an adhesive (Col. 2, lines 60-65) that is dried (Col. 2, lines 50-58), and the carrier removed of the temporary substrate." (Final Action, p. 3). From the foregoing statement, the Final Action appears to assert that this drying operation corresponds to the "applying a composition" and "hardening" steps of Claim 14. However, as described in Casey, it is not an adhesive that is "dried," as the cited passage refers to a metal

paste that is dried "during the metal paste screening and drying operations" (Casey, Col. 2, lines 56-57). Further, this metal paste does not form a carrier element when it is dried. Therefore, Casey does not disclose the step of "hardening the applied composition to form the carrier element" as recited in Claim 14.

Nor do the other cited references appear to disclose such a recitation. Thus, as neither Casey nor the other cited references disclose the step of "hardening the applied composition to form the carrier element," the combination of the references fails to disclose or suggest *all* of the recitations of Claim 14. Accordingly, applicants submit that Claim 14 and the claims that depend therefrom are in condition for allowance for at least these additional reasons.

Applicants further submit that the pending claims are patentable because there is no motivation to combine the cited references. To establish a *prima facie* case of obviousness, the prior art reference or references when combined must not only teach or suggest all the recitations of the claim, there must also be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). To support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The Court of Appeals for the Federal Circuit has further stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

Applicants submit that there is no motivation to combine the teachings of Casey and Yamazaki because of their dissimilar applications. Casey relates to the prevention of warping and distortion in the production of printed circuits from dielectric ceramic greensheets. (Casey, Col. 1, lines 9-18). Yamazaki, on the other hand, relates to the fabrication of display

devices, such as liquid crystal displays. (Yamazaki, Col. 1, lines 12-13). One of skill in the art would not be motivated to combine Casey with Yamazaki, because techniques used in printed circuit production do not suggest the desirability of combination with techniques of display device fabrication.

The Final Action asserts that it would have been obvious to combine the plastic substrate discussed in Yamazaki with the printed circuit formation process described in Casey because of "the need to obtain a portable device." (Final Action, p. 3). However, while portability may be important for ease and convenience in transporting the display devices of Yamazaki, Casey makes no mention of such a concern. In contrast, Casey is concerned with the prevention of warping and distortion of thin greensheets during printed circuit formation. (Casey, Col. 2, lines 42-43). These thinner greensheet layers are primarily used to meet increasing demands for miniaturization, allowing for reduced costs and greater flexibility in package design. (Casey, Col. 1, lines 21-23 and lines 48-55). Thus, as portability is not a major concern in printed circuit production, the stated motivation to combine is not suggested or supported by Casey.

Furthermore, Yamazaki actually teaches away from the combination with Casey relied on in the Final Action. As discussed above, Casey relates to printed circuit formation. To prevent warping and distortion of the ceramic greensheets used in printed circuit formation, the greensheets are releasably supported by a carrier during the via formation process. (Casey, Col. 3, lines 6-11). As described in Casey, the via formation process involves forming holes in the greensheets, screening the greensheets with electroconductive paste to fill the holes, and drying the paste to form the vias. (Casey, Col. 2, lines 46-58). As is known by those of skill in the art, the drying step described in Casey involves heat. However, Yamazaki clearly states that plastic has poor heat resistance. (Yamazaki, Col. 2, lines 39-40). Thus, Yamazaki teaches away from the use of plastic as a carrier in the printed circuit formation process of Casey. Accordingly, applicants submit that the pending claims are in condition for allowance for at least these additional reasons.

Various of the dependent claims of the present invention are also separately patentable. For example, Claims 9, 19, 23, and 26 each recite components that are adhesively secured or soldered to the electrically conductive structure. The Final Action asserts that

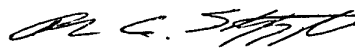
In re: Ammann et al.  
Serial No. 10/001,920  
Filed: October 31, 2001  
Page 11 of 11

Casey discloses an adhesive that holds components to the electrically conductive structure. (Final Action, p. 5). However, as described in Casey, the adhesive to which the Final Action refers actually connects the electroconductive circuit layer 13 to the carrier layer 11, and, as such, does not connect components to the electroconductive circuit layer. (Casey, Col. 4, lines 38-44). Claims 13 and 26 further recite the use of surface mount components. Again, the Final Action asserts that Casey discloses such components at Col. 2, lines 20-40. (Final Action, pp. 5-6). However, the passage cited in the Final Action merely discloses "structures on the surface" of a multi-layer ceramic body, and makes no mention of "surface mount components" as the term is known in the art. (Casey, Col. 2, lines 24-29). Accordingly, Applicants submit that Claims 9, 13, 19, 23 and 26 are also in condition for allowance for at least these additional reasons.

### **Conclusion**

Applicants respectfully submit that, for the reasons discussed above, the references cited in the present rejections does not disclose or suggest the present invention as claimed. Accordingly, Applicants respectfully request allowance of all the pending claims and passing this application to issue.

Respectfully submitted,



Rohan G. Sabapathypillai  
Registration No. 51,074

Myers Bigel Sibley & Sajovec  
P.O. Box 37428  
Raleigh, NC 27627  
(919) 854-1400 phone  
(919) 854-1401 fax

### **Certificate of Mailing under 37 CFR 1.8**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450 on November 12, 2003.



Traci A. Brown